

Publication No: 97

Minimum Competencies

Series (T) : 23

MINIMUM VOCATIONAL COMPETENCY BASED CURRICULUM

--- - AUDIO VISUAL TECHNICIAN ----

(9th January -- 14th January, 1985)

DEPARTMENT OF VOCATIONALIZATION OF EDUCATION

NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

SRI AUROBINDO MARG, NEW DELHI -- 110016



## CONTENTS

1. Introduction	1
2. Job Opportunities	3
3. Job Description	3
4. Job Analysis	4
5. Objectives of the course	7
6. Curriculum	8
7. Proposed Time Allocation	8
8. Recommended structure of the Course with Time-Distribution and Evaluation scheme	9
9. Syllabus	11
10. Suggested references and reading materials.	25
11. List of Equipment and Tools (Instruments, Furniture, Space required etc.)	26
12. Staff and Manpower	28
13. Total Expenditure	29
14. Suggestions for Implementation	30
15. List of Experts	31

\  
-----



## INTRODUCTION

The Minimum Vocational Competency based Curriculum on the 'Audio-Visual Technician' has been prepared for a two year course at the Higher Secondary (+2) stage of school education. It has been designed to ensure that the students attain the knowledge and skill levels required for the job after completion of the course.

Competency is the ability to perform a specific task or duty successfully. The 'Competency based Education' establishes a direct link between the things which students must learn in the institution, and the knowledge and skills expected from them in the employment market. Competency based Vocational education, is, thus, a way of instructional planning, which,

- (i) Identifies the competencies needed for "on the job" performance.
- (ii) Prepares the student through detailed and methodical training so as to fulfill the objectives of the vocation i.e. acquisition of knowledge, skill and attitude to perform a given job,
- (iii) is based on the realities of the world of work.

To achieve the above objectives, a course of study consisting of essential skills and related knowledge is necessary. Beside the identification of minimum competencies the task and the skill analysis form an essential exercise before designing and planning of suitable curricula for the vocational subjects.

The procedure for this purpose to be followed is--

1. Listing of job opportunities
2. Analysis of tasks into the areas of knowledge
3. Preparing course content by projecting tasks, skills and personality traits.



After the completion of such analysis, the minimum vocational competencies are to be arrived at and the curriculum is to be developed.

The Department of Vocationalization of Education, NCERT, organized a workshop at the Institute of Engineering and Rural Technology, 26, Chatham Lines (Prayag), Allahabad-211002. (U.P.) from 9th January to 14th January 1985, for developing the minimum Vocational competency based curriculum on the 'Audio Visual Technician'.

The essential requirements of a job oriented curriculum was systematically analyzed by a panel of experts from all over the country. The result of the deliberations follow as a syllabus in this vocation. Since this vocational course is school based, the existing pattern of the academic courses conducted at (+2) stage has been assumed. The duration as well as time allocation for vocational subjects has been considered while preparing this draft.

The implementation of such a need and competency based vocational education programme will go a long way in developing confidence of the teacher/student community in the area of their suitability to the industrial commercial needs, as also in building up a meaningful rapport between employer and employee due to inherent horizontal mobility, of the products of these courses. It is hoped that the genuine needs of the society will then be fulfilled to a greater extent.





## LISTING OF JOB OPPORTUNITIES

### A. WAGE EMPLOYMENT

1. AV technicians in schools/institutes.
2. Training sections of Industries/departments.
3. Field Publicity departments of Government as well as public and private sectors.
4. Hotels, auditoria, Guest Houses, railways, picture houses, theatres, TV studios.
5. Multi media agencies.
6. Commercial producers and agencies.

### B. SELF EMPLOYMENT

1. Service agency for audio visual equipment
2. Organize commercial production facility
3. Dealership/agency of audio visual equipment
4. Production of simple audio visual equipment

## JOB DESCRIPTION

1. Identification and selection of AV equipment
2. Testing and installation of AV equipment
3. Operation of AV equipment
4. Preventive maintenance of AV equipment and materials.
5. Fault diagnosis and repair
6. Purchase and storage of AV equipment and spares.



JOB ANALYSIS

JOB DESCRIPTION (1)	TASKS (2)	SKILLS (3)	KNOWLEDGE (4)
(1) Identification and selection of AV equipment	(1) Comprehension of required job/task. (2) Selection of appropriate equipment.	(1) Ability to identify an AV equipment by Visual look and inspection.	(1) Knowledge of various AV equipment & their specifications. (2) Applications of different AV equipment
(2) Testing and Installation of AV equipment	(1) Physical Inspection. (2) Electrical inspection (3) Ensuring appropriate mains supply for equipment (4) Ensuring safety precautions (5) Testing for proper functioning. (6) Setting up of controls for desired performance. (7) Ensuring proper working environment e.g. light, screen, darkroom, accoustics, temperature etc.	(1) Skill in proper operation and handling. (2) Skill in proper installation. (3) Skill in setting up and adjustments	(1) Knowledge of various parts of AV equipment. (2) Knowledge of working principles of AV equipment. (3) Knowledge of standard practices of installation. (4) Knowledge of safety regulations. (5) Knowledge of site selection. (6) Knowledge of installation techniques. (7) Knowledge of working environment. (8) Knowledge of test requirements and procedures.
(3) Operation of AV equipment	(1) Ensuring prerequisites for operation viz-- power supply, safety, measures, spares, accessories and service kit.	(1) Skill of handling equipment. (2) Identification of projected aids/transparancies for proper projection.	(1) Working principles of AV equipment. (2) Knowledge of requirements for proper operation.



(1)	(2)	(3)	(4)
	(2) Preparation for and execution of a test run. (3) Sequential operation (4) Control & adjustments during operation.	(3) handling minor break downs during operation.	
4. Preventive maintenance of AV equipment materials	(1) Preparation of maintenance schedules. (2) Carrying out maintenance as per recommendations of equipment manufacturer wherever available.	(1) Use of proper tools. (2) Replace-ment & adjustment procedures.	(1) Knowledge of equipment. (2) Knowledge of maintenance schedules. (3) Elementary knowledge of inventory control for stocking of spares.
5. Fault diagnosis and repair.	(1) Preliminary analysis of the fault or fault report. (2) Selection of tools equipment components and spares. (3) Visual inspection of equipment. (4) Rectification of physical damage, if any. (5) Energizing the defective equipment. (6) Sequential checking and location of fault. (7) Proper component selection and replacement. (8) Fault rectification. (9) Testing for normal operation.	(1) Skill of fault analysis. (2) Skill for use of test instruments. (3) Soldering/ desoldering techniques. (4) Skill for fault tracing. (5) Skill for component testing. (6) Skill for measurements. (7) Skill for mechanical adjustments. (8) Skill for accurate replacement.	(1) Knowledge of trouble shooting techniques. (2) Knowledge of working principles of different stages. (3) Knowledge of fault symptoms & rectification. (4) Working & operating principles of test & measuring instruments.



(1)	(2)	(3)	(4)
6. Purchase & storage of equipment and spares.	(1) Product & market awareness (2) Price awareness (3) Framing of specifications & interpretation. (4) Purchase procedures. (5) Acceptance tests. (6) Ensuring storage environment as per manufacturer's recommendations.	(1) Skill for handling test instruments for acceptance tests.	(1) Knowledge of working principles of equipment & test instruments. (2) Knowledge of storing conditions for AV equipment and spares. (3) Knowledge of purchase specifications and market.

**NOTE:**

In all types of jobs described above, the following 'PERSONALITY TRAITS' are essential

Initiative and co-operation attitude;  
 Good conduct and punctuality;  
 sincerity and tactfulness;  
 awareness and willingness;  
 Patience,  
 Readiness;  
 Calmness;  
 Reasoning power.





### OBJECTIVES OF THE COURSE

On completion of the Vocational course in Audio Visual Technician a student should have

1. Knowledge of working and operating principles of various Audio Visual equipment.
2. Developed skills for operation, diagnosis and fault analysis of the Audio Visual equipment and materials.
3. Developed skills in testing, minor repair and maintenance of Audio Visual equipment.
4. Elementary knowledge of enterpreunership activities.
5. Awareness of safety precautions.

As terminal behaviour, a student at the end of the course should be able to -

1. Examine schematics, layouts and wiring diagrams along-with product data.
2. Diagnose faults with the aid of test equipment.
3. Minor repair and replace simple faulty parts.
4. Test, align and adjust the Audio Visual equipment.
5. Install, repair and operate various Audio Visual equipment and other accessories.

The Audio Visual equipment under the scope of this course shall be limited to the following areas.

1. Slide projectors-sound, silent, remote-control
2. Filmstrip projectors, sound, silent.
3. Overhead projectors.
4. Opaque projectors.
5. Micro projectors.
6. Motion picture projectors-8 mm, 16 mm.
7. Record players.
8. Audio tape equipment record/playback/duplication.
9. PA systems.
10. Radio & TV receivers.
11. CCTV systems.
12. Video recording equipment
13. Copiers.



## CURRICULUM

The curriculum developed for the vocational course has two distinct parts-- theory and practice. The weightage for those two parts is about 40 : 60. The total hours of distribution of course content of different papers would be as given in the "Proposed Time Allocation".

The syllabus has been divided into three theory papers with close correlation to three practical papers and sessional assignments per year. The laboratory assignments have been carefully designed to achieve the objectives stated earlier.

## PROPOSED TIME ALLOCATION:

Working hour for school in our country is about thirty three hours per week. Approximately, thirty-nine weeks are utilised for instructional purposes in an academic year in our schools, because, approximately, thirteen weeks are ear-marked for vacation( 8 weeks for closed holiday, 2 weeks for examination preparation, 1 week for conducting examination, 2 weeks for other holidays) in an academic year in our schools. Hence, total time available for instruction in an academic year is approximately (  $33 \times 39 = 1287$  ) 1287 hours. Say 1200 hours in an academic year.



RECOMMENDED STRUCTURE OF THE COURSE WITH THE DISTRIBUTION  
AND EVALUATION SCHEME:

CLASS XI

SUBJECTS	Weightage	Instr- uction Hr.	Exam Marks	Sessio- nal Marks	Total Marks
Language I (Regional)	10%	120	100	-	100
Language (English)	10%	120	100	-	100
Basic Foundation course	5%	60	50	-	50
General Foundation Course	5%	60	50	-	50
Vocational Theory I	10%	120	100	-	100
Vocational Theory II	10%	120	100	-	100
Vocational Theory III	10%	120	100	-	100
Vocational Practical I	12.5%	150	100	25	125
Vocational Practical II	12.5%	150	100	25	125
Vocational Practical III	15%	180	100	50	150
	100%	1200	900	100	1000

Vocational Theory III and Vocational Practical III are  
core of the Vocation.



CLASS XII

Subjects	Weightage	Instruction Hr.	Exam Marks	Sessional Marks	Total Marks
<hr/>					
Language III					
(Regional)	10%	120	100	-	100
Language					
(English)	10%	120	100	-	100
Basic Foundation					
Course	5%	60	50	-	50
General Foundation					
Course	5%	60	50	-	50
Vocational Theory IV	10%	120	100	-	100
Vocational Theory V	10%	120	100	-	100
Vocational Theory VI	10%	120	100	-	100
Vocational Practical					
IV	12.5%	150	100	25	125
Vocational Practical					
V	12.5%	150	100	25	125
Vocational Practical					
VI	15%	180	100	50	150
<hr/>					
	100%	1200	900	100	1000

Vocational Theory VI and Vocational Practical VI are core of the vocation.





SYLLABUS FOR THE VOCATION:  
AUDIO VISUAL TECHNICIAN

CLASS XI

LANGUAGE I (Regional)                      Total Marks: 100  
Instruction Time : 120 Hrs.

Content of the syllabus will be same as that of Academic stream.

LANGUAGE II (English)                      Total Marks : 100  
Instruction Time : 120 Hrs.

Content of the syllabus will be same as that of Academic stream.

Basic Foundation Course (BFC)  
Total Marks : 50  
Instruction Time : 60 Hrs.

Physics/Chemistry/Mathematics/Engineering Drawing related to the vocation

General Foundation Course (GFC)  
Total Marks : 50  
Instruction Time : 60 Hrs.

(Social Science, Health and Hygiene, Entrepreneurship, Accountancy and Book Keeping related to the Vocation)



VOCATIONAL THEORY IELEMENTS OF AUDIO VISUAL TECHNIQUES

TOTAL MARKS : 100

Instruction Time : 120 Hrs.

1. Basic Electricity ( 30 Hours)

Sources of voltage AC and DC voltages and their graphical representations; concept of phase, frequency r.m.s. average values, batteries, power supply regulations.

Ohm's Law, Kirchoff's Laws, Power transfer concepts and their applications.

Resistors, capacitors, Inductors, Impedance, component ratings and colour codes.

Magnetism, Electromagnetic Induction, Flux, permeability.

2. Hand Tools ( 20 Hours)

Simple hand tools

Soldering Iron various types. proper uses and maintenance.

Desoldering tools,

Common tools used in servicing work.

3. Electronic circuits ( 30 Hours)

Series, parallel and combination circuits of resistors, capacitors and inductors.

Series and parallel resonant circuits.

Working principles of semiconductor devices,

Transistors PNP-NPN symbols, specifications and simple testing methods.

4. Optics ( 40 Hours)

Projection Lenses, formation of images, focal length, application for projectors

Mirrors and their applications

Projection lamps, screens, surface materials for screens. Methods of mounting screens,

sizes of screens.



VOCATIONAL THEORY II:STILL AND MOTION PICTURE PROJECTION EQUIPMENT

TOTAL MARKS : 100

Instruction Time : 120 Hrs

1. ELECTRICITY AND ELECTRONICS ( 30 Hours)

Basic principles of opto-electronic devices like photo cells etc.

Transformers, and other parts

Introduction to IC's common IC's used in AV equipment

Rectifiers and voltage stabilizers

Basic principles of electric motors and simple appliances.

Types and uses of voltage regulating stabilizing equipment

2. STILL PICTURE PROJECTORS (30 Hours)

Working principle and operation of slide projectors- sound, silent and remote control type.

Overhead projectors-principles and uses

Filmstrip projectors, types, working principles, operation

3. MOTION PICTURE PROJECTORS (60 Hours)

Mechanics of motion picture projection,

Basic design, operating parts, operating directions.

Setting up, film threading, jointing,

Types of films, types of film damage,

8 mm projection-Introduction and uses.

16 mm projector-working principle, operation and block diagram

care of films

setting up of a projector for operation.



VOCATIONAL THEORY III:  
AUDIO VISUAL EQUIPMENT ; (MAINTENANCE)

TOTAL MARKS : 100

Instruction time : 120 Hrs.

SUPPORTING EQUIPMENT ( 30 Hours)

Needs for supporting equipment, room darkening, projection distances, standard accessories, acoustics considerations, power requirements, storage of equipment and materials

Types of projection tables

Estimation of equipment requirements according to needs.

COPIERS AND SCANNERS ( 30 HOURS)

Basic principles of operation of copiers, types of copiers and advantages, disadvantages.

Block diagram of copiers

Electronic scanner, working principles block diagram and operation, requirements for electronic scanning, multicopy systems.

CARE AND MAINTENANCE ( 60 Hours)

Soldering and desoldering techniques,

Types of film damage, problems in motion picture projection,

Testing methods for motion picture

Projectors,

Maintenance aspects for combination of different types of projectors

Care of films and other spares, clearing and waxing of films, probable faults their causes and rectification,

Maintenance problems in copiers and electronic scanners.





VOCATIONAL PRACTICAL I

TOTAL MARKS : 100(50 %)

Instruction Time : 150 Hrs

- I. Drawing of Electrical and Electronic symbols.
2. Freehand sketching of electronic components and spare parts.
3. Practice of formation of images with different types of lenses(used in Projectors)
4. Practice of formation of images with different types of mirrors (used in Projectors)
5. Identification of components and devices.
6. Verification of Ohm's Law
7. Verification of Kirchoff's Laws
8. Study of series circuit
9. Study of parallel circuit
10. Use of a still projector to form images of different sizes.
- II. Study of hand tools
12. Measurement of voltages and current
13. Study of different types of still projectors
14. Study of opaque projectors



VOCATIONAL PRACTICAL II

TOTAL MARKS : 100 (E) 25(S)

Instruction Time : 150 Hrs.

1. Soldering and desoldering practice
2. Study of motion picture projector and its parts
3. Setting up and operation of an 8 mm projector
4. Film threading and rewinding
5. Layout diagrams of film threading
6. Testing of a motion picture projector
7. Fabrication of extension boards and other auxilliaries
8. Fuse replacements and ratings
9. Study of voltage stabilizers.



VOCATIONAL PRACTICAL III

TOTAL MARKS : 100 (E) 50 (S)

Instruction Time: 180 Hrs

1. Study of earthing connections
2. Care of films like waxing and cleaning
3. Maintenance of still projectors
4. Maintenance of opaque projectors
5. Splicing of different types of films.
6. Testing of a motion picture projector
7. Simulated fault finding on
  - (a) Still projectors
  - (b) Opaque projectors
  - (c) Motion picture projectors

MAXIMUM TIME SHOULD BE ALLOTTED TO  
FAULT FINDING ASPECTS IN CASE OF  
ALL EQUIPMENT

E- Examination marks

S- Sessional marks



CLASS XIILANGUAGE III (Regional)

Total Marks : 100

Instruction Time : 120 Hrs.

Content of the syllabus will be same to that of Academic stream.

LANGUAGE IV (English)

Total Marks : 100

Instruction Time : 120 Hrs

Content of the syllabus will be same to that of Academic stream

BASIC FOUNDATION COURSE (BFC)

Total Marks : 50

Instruction Time : 60 Hrs

(Physics/chemistry/Mathematic/Engineering drawing related to the vocation)

GENERAL FOUNDATION COURSE (GFC)

Total Marks : 50

Instruction Time : 60 Hrs

(Social Science, Health and Hygiene, enterprenurship, Accountancy and Book Keeping taxation and insurance related to the vocation)





VOCATIONAL THEORY IV

TOTAL MARKS : 100

INSTRUCTION TIME :120 Hrs.

BASIC ELECTRONICS AND P.A. SYSTEMSI. ELECTRONICS (40 Hours)

Rectifiers-half wave, full wave, bridge types,  
filter circuits.

Power supply regulators-Zener regulation,  
Series and shunt regulators

Amplifiers classification, Audio amplifiers  
voltage and power amplifiers

Discussion of a few typical circuits used in PA systems  
and AV equipment.

RF amplifiers-typical circuits used in radio receivers

Oscillators-typical circuits used in AV equipment

Microphones, pickups, loudspeakers,

Impedance matching

2. PUBLIC ADDRESS SYSTEMS ( 80 Hours)

Principles of magnetic recording, technical  
aspects of phonograph records. Basic design  
of PA amplifier and record player.

Stereophonic recording and playback  
equipment

Operation of a record player

Basic features of specific record players

Fault finding techniques in PA systems,  
and record players.

Record changer-mechanical and electrical  
aspects of operation.



VOCATIONAL THEORY V

TOTAL MARKS : 100

INSTRUCTION TIME: 120 Hrs.

MEASURING INSTRUMENTS, RADIO AND TAPE RECORDERS1. MEASURING.....INSTRUMENTS (30 Hours)

Principles of voltmeter and ammeter

principles and working of a multimeter

Uses and applications of : a multimeter

power supply testing with a multimeter

2. RADIO/TAPE RECORDERS ( 90 Hours)

Introduction to radio, block diagram,

test points in a radio receiver

Applications of a tape recorder, mechanical

system of a tape recorder, sound inputs for

tape system and PA system, accessories

for tape recording system.

Recording tape, specifications and recording

directions, VU meters

Study of selected tape recorders

Stereophonic recording and playback

equipment

Study of specific tape player systems

and combinations like radio-tape-record

players. Use of strobe disc

Types of cleaners and their applications

Methods of cleaning and safety precautions

Typical radio receiver familiarization

concept of IF alignment in a radio receiver.



VOCATIONAL THEORY VITV, VCR AND CCTV SYSTEMS

TOTAL MARKS : 100

Instruction Time : 120 Hrs.

1. TELEVISION (50 Hours)

Block diagrams of a TV receiver, principles of operation aided by block schematics, location of components. Setting and adjustment procedures.

Principle of operation of a TV camera, setting and adjustment procedures

Safety precautions in a TV receiver

Antenna installation

Proper tuning and adjustments in a TV receiver

2. VCR AND CCTV SYSTEMS ( 70 Hours)

Block diagram of a CCTV system. Further additions to the systems. Multimonitor connections

Operation and control in a CCTV systems

Introduction to video recording techniques  
types of VCR formats

Introduction to VHS and U-matic systems

Operation and control of a VCR

Safety precautions for CCTV and VCR systems

Tape loading and storage for video tape and VCR

Illumination and lighting arrangements  
for video recording. Types of lamps and lighting level.

Lamp fittings like barn-doors etc.

Introduction to multimedia presentation  
involving more than one type of AV equipment

Few workouts for such multimedia  
equipment operation should be carried out  
in the classroom.



VOCATIONAL PRACTICAL IV

TOTAL MARKS :100(E) 25(S)

Instruction Time:150 Hrs

1. Assembly and study of a rectifier
2. Study of a power supply regulator
3. Study of an amplifier circuit and voltage readings at various points
4. Study of a typical public address system
5. Setting up and operation of a PA system
6. Performance test of a PA system
7. Connecting microphones and loudspeakers for a few typical applications
8. Study of accessories and controls for a typical PA systems
9. Setting up of a PA system for proper reproduction quality
10. Exercises on Fault finding and rectification.
11. Setting up of and testing of a record player.
12. Speed checking and mechanical adjustments in a record player.





VOCATIONAL PRACTICAL V

TOTAL MARKS : 100(E) 25(S)

Instruction Time: 150 Hrs

1. Voltage readings at different check points in a PA system by a multimeter.
2. Setting up of a radio receiver for proper operation and voltage readings.
3. Replacement of a speaker in a radio receiver,
4. Dial cord threading exercises for radio receivers.
5. Study of mechanical transport system for a tape recorder.
6. Study of accessories for a tape recorder
7. Exercises in recording operations in a tape recorder.
8. Study of typical stereophonic tape recorders.
9. Study of combination systems of two-in-one and three-in-ones.
10. Exercises in fault finding and rectification in typical tape recorders.

MAXIMUM TIME SHOULD BE ALLOWED TO  
PRACTICAL ASPECTS ON EQUIPMENT  
AND FAULT FINDING

E-- Examination marks

S-- Sessional marks



VOCATIONAL PRACTICAL VI

TOTAL MARKS: 100(E) + 50(S)

Intruction Time: 180 Hrs.

- I. Study of a TV receiver
2. TV installation
3. TV Antenna Installation and Testing
4. Setting up and adjustment of TV
5. Minor fault detection and rectification
6. Setting up and operation of a TV camera
7. Study of Multimonitor connections
8. Study of a TV camera
9. Exercises on Interconnection
10. Study and operate a VCR
11. Interconnection techniques like preparation of cables and video patch cords
12. Exercises on fault finding techniques in Audio Visual equipment

MAXIMUM TIME SHOULD BE ALLOWED  
TO PRACTICAL ASPECTS ON EQUIPMENT  
AND FAULT FINDING

E-- Examination marks

S-- Sessional marks



SUGGESTED REFERENCES AND READING MATERIALS

1. How to service tape recorders, by C.A. Tuthill.  
D.B. Taraporevala Sons  
& Co.
2. Record changers, How they work by Louis M. Dezettel  
D.B. Taraporevala
3. How to select and use HI-FI and  
Stereo Equipment Volume I by Murray P. Rosenthal  
D.B. Taraporevala
4. Simplified Electronics Measure-  
ments . How to get more from  
low cost test equipments by John H. Fasal  
D.B. Taraporevala
5. Preparation and use of Audio  
Visual Aids by Haas & Packer  
Prentice-Hall of India  
(Pvt) Ltd
6. Application & Operation of  
Audio Visual equipment in  
Education by Fred John Pula  
John Wiley & Sons Inc.  
New York, London
7. An Introductory course for  
Electrical Technicians by R.J. Hartles  
Pitman Paperbacks
8. Television Service Manual by Audel  
D.B. Taraporevala
9. Television Principle &  
Practice by Zarach & Mersis  
Mc Millan Press
10. Basic Radio & Television by S.P. Sharma  
Tata Mc Graw Hill  
Publishing Co. Ltd.
11. T.V. Trouble shooting  
Dictionary by Saunth.  
Nitra, New Delhi
12. Instructional Materials  
Manual by Brown & Lewis,  
Mc Graw, Hill
13. The publications of Business  
Promotion Bureau, Delhi - on practical topics like TV,  
colour TV and VCR etc.



LISTS OF EQUIPMENTS AND TOOLSA. INSTRUMENTS & EQUIPMENTS

1. Multimeters	5
2. Slide Projectors/Film strip projectors	2
3. Overhead projector	1
4. Opaque projector	1
5. Micro projector	1
6. Automatic slide projector	1
7. 16 mm projectors complete with all accessories including screen	2
8. 8 mm projector	1
9. Voltage stabilizers (one each of auto & manual)	2
10. Audio cassette recorders	5
11. Disc play back units	2
12. Audio amplifiers for P.A. systems	2
13. Loudspeakers--different & assorted ratings(counted in baffles)	5
14. Microphones--suitable for P.A. amplifiers	4
15. A.M. Radio receivers(Assorted types like single band & multiband)	5
16. T.V. Receivers--- B/W	2
-- do-- Colour	2
17. Closed circuit T.V. cameras	2
18. VCR---VHS Format	2
"U" ratio format	2
19. Luminaires & lighting fixtures 5 different types	5
20. Film Rewinders	2
21. Tape splicers	2
22. Film splicers	2
23. Plain paper copier	1





B. FURNITURES

1. General purpose lab tables/service benches	10
2. Wooden stools	50
3. Chairs	4
4. Work benches	2
5. Almirahs	4
6. Storage racks	6
7. Projection tables & stands	2
8. Rewinding & slicing tables	2
9. Table stand for P.P.C.	1
10. Table lamps	12

C. SPACE REQUIREMENT

Two laboratories of 50 square meters each with  
RVC flooring

Two class rooms and staff rooms to accommodate  
25 students in each class room.

D. TOOLS

1. Screw driver sets	5 sets
2. Combination pliers (insulated)	5 Nos
3. Soldering irons & flux	5 "
4. Allen key sets	5 sets
5. Neon testers	25 Nos



STAFF AND MANPOWER

I. Entry Qualifications

For

Lecturer/Instructor

- a. Diploma in Electronics or Electrical Engineering with at least 3 years experience in handling Audio- Visual equipments in organization of repute.

OR

- b. NCVT certificate in Electronics/radio & TV with 5 years experience in handling Audio Visual equipments in organization of repute.

2. REQUIREMENTS

Lecturers	----	Two posts
Instructors	----	Two posts
Lab. Asstts.	----	One post

NOTE: IT IS RECOMMENDED THAT GUEST  
LECTURES SHOULD BE ARRANGED  
WHEREVER NECESSARY



TOTAL EXPENDITUREA. LIBRARY GRANTS:

An amount of Rs. 5000/- will be required as a  
"Library Grant"

B. TOTAL EXPENDITURE

Equipment	2,20,000/-
Furniture	43,400/-
Tools	2,100/-
Library	5,000/-
Recurring expenditure	5,000/-

---

Rs. 2,75,500

---



### SUGGESTIONS FOR IMPLEMENTING

1. Students should be made aware of career prospects of the course before admission.
2. Teachers should be well qualified and should have adequate professional experience.
3. Teachers should be sent for refresher courses for improvement of teaching/training.
4. Students should be taken for field visits to places where A.V. equipments are installed.
5. In order to increase the effectiveness of the course, the students must have attachment training in institutions, departments etc. having A.V. equipment installation during vocations.
6. The students should be placed as apprentice at such institutions after completion of the vocational course.
7. This vocational course should be introduced, only after ensuring availability of the complete set of equipment facilities and teaching faculties.
8. Wide publicity should be made about the course. In order to ensure employment opportunities to the student, recruitment rules and procedures of employers, manufacturers and private entrepreneurs should be suitably altered.





LIST OF EXPERTS

1. Sh. N.K. Mohanty  
Director  
Staff Training Institute (Tech.)  
All India Radio  
14 B, L.I.C. Estate, Ring Road  
New Delhi- 110 002
2. Sh. S.K. Kar  
Dean, Non-F formal Courses  
Instt. of Engr. & Rural Technology  
26, Chatter Lines (Prayag)  
Allahabad - 211002 (U.P.)
3. Sh. R.K. Saxena  
Asstt. Prof. C.D.C.  
Instt. of Engr. & Rural Technology  
26, Chatter Lines (Prayag)  
Allahabad - 211 002 (U.P.)
4. Shri. Om Prakash  
Asstt. Prof., (Elect. Engrg.)  
Instt. of Engr. & Rural Technology  
26, Chatter Line, (Prayag)  
Allahabad - 211 002 (U.P.)
5. Sh. T.D. Bisht  
Incharge A.V. Cell  
Instt. of Engr. & Rural Technology,  
26, Chatham Lines (Prayag)  
Allahabad - 211 002 (U.P.)
6. Sh. R.K. Lal  
Training & Placement Officer  
Instt. of Engr. & Rural Technology  
26, Chatham Lines, (Prayag)  
Allahabad - 211 002 (U.P.)
7. Sh. S.F. Tare  
Training Officer  
Advanced Training Instt.,  
Sion - Trombay Road  
Bombay - 400 022
8. Sh. N.P. Battacharya  
DVE, N.C.E.R.T., New Delhi - 110 016